

By Facsimile  
Attorney Docket No. 197-008-USP

**Amendments to the Claims**

Please amend the claims as follows:

1-3 (Canceled)

4. (Previously Presented) A method of processing digital image data comprising:  
overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,  
assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,  
comparing the brightness values of the groups of pixels using a local radial angular transform,  
detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a triangular shape is present within the image.

5. (Previously Presented) A method of processing digital image data comprising:  
overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,  
assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,  
comparing the brightness values of the groups of pixels using a local radial angular transform,  
detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a line junction is present within the image.

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6. (Previously Presented) A method of processing digital image data comprising:  
overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,  
assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,  
comparing the brightness values of the groups of pixels using a local radial angular transform,  
detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a disk shape is present within the image.

7. (Previously Presented) A method of processing digital image data comprising:  
overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,  
assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,  
comparing the brightness values of the groups of pixels using a local radial angular transform,  
detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a ring shape is present within the image.

8-22 (Canceled)

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23. (Currently Amended) A method of processing digital image data wherein the digital image data includes lines and edge features, comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image data,

wherein the detecting of regions of contrast includes detection of only lines of a predetermined width, and wherein detection of only lines of a predetermined width excludes the detection of at least some edge features.

24. (Currently Amended) A method of processing digital image data wherein the digital image data includes lines and edge features, comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image data,

wherein the detecting of regions of contrast includes detection of only lines of a predetermined darkness or brightness, and wherein detection of only lines of a predetermined darkness or brightness excludes the detection of at least some edge features.

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25-30 (Canceled)

31. (Previously Presented) A method of processing digital image data comprising providing a hierarchical description of shapes in an image according to scale by applying a local radial angular transform to the digital image data.

32. (Previously Presented) The method of claim 31 wherein the shapes are lines.

33. (Currently Amended) A method of processing digital image data comprising:  
applying a local radial angular transform to the digital image data to provide transform coefficients of  $c_1$ ,  $c_2$ ,  $c_3$ , and  $c_4$ ; and

utilizing at least one of a modulus of the  $c_3$  transform coefficient to detect line objects, a modulus of the  $c_2$  transform coefficient to detect semi-plane objects, a modulus of the  $c_4$  transform coefficient to detect triangle objects and line junction objects, and a modulus of  $\left( B_0 - \frac{c_1}{\sqrt{6}} \right)$  a mathematical relationship between  $B_0$  and  $c_1$  to identify ring objects and disk objects, wherein  $B_0$  represents a brightness value or a color value of a central element of elements used in the local radial angular transform.

34. (Canceled)

35. (Previously Presented) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six

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pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a triangular shape is present within the image.

36. (Previously Presented) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a line junction is present within the image.

37. (Previously Presented) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

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comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a disk shape is present within the image.

38. (Previously Presented) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a ring shape is present within the image.

39. (Currently Amended) A computer-readable medium having computer-executable instructions for performing operations that process digital image data wherein the digital image data includes lines and edge features, the operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image data,

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wherein the detecting of regions of contrast includes detection of only lines of a predetermined width, and wherein detection of only lines of a predetermined width excludes the detection of at least some edge features.

40. (Currently Amended) A computer-readable medium having computer-executable instructions for performing operations that process digital image data wherein the digital image data includes lines and edge features, the operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image data,

wherein the detecting of regions of contrast includes detection of only lines of a predetermined width, and wherein detection of only lines of a predetermined darkness or brightness excludes the detection of at least some edge features.

41. (Currently Amended) A computer-readable medium having computer-executable instructions for performing operations that process ~~method of processing~~ digital image data, the operations comprising providing a hierarchical description of shapes in an image according to scale by applying a local radial angular transform to the digital image data.

42. (Currently Amended) The ~~method~~ computer-readable medium of claim 41 wherein the shapes are lines.

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43. (Currently Amended) A computer-readable medium having computer-executable instructions for performing operations comprising:

applying a local radial angular transform to the digital image data to provide transform coefficients of  $c_1$ ,  $c_2$ ,  $c_3$ , and  $c_4$ ; and

utilizing at least one of a modulus of the  $c_3$  transform coefficient to detect line objects, a modulus of the  $c_2$  transform coefficient to detect semi-plane objects, a modulus of the  $c_4$  transform coefficient to detect triangle objects and line junction objects, and a

modulus of  $\left( \frac{B_0 - c_1}{\sqrt{6}} \right)$  a mathematical relationship between  $B_0$  and  $c_1$  to identify ring

objects and disk objects, wherein  $B_0$  represents a brightness value or a color value of a central element of elements used in the local radial angular transform.



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